Amendments to the Claims:

1. (original) A method for measuring loop resistance comprising:

injecting into the loop through an inductive injection probe a sinusoidal drive signal at a given frequency to produce a predetermined current in the loop;

measuring, by a test probe also inductively coupled to the loop, the true RMS drive signal voltage and induced current; and

calculating the loop resistance from the measured RMS values.

2. (original) A method according to claim 1, in which the given frequency is of the order of 1 kHz.

3. (currently amended) A method according to claim 1 ~~or claim 2~~, in which the sinusoidal signal is generated by a microcontroller using a digital to analogue converter.

4. (original) A method according to claim 3, in which the converter is configured to convert a microcontroller generated 0 – 10V signal to an output voltage in the range 0 200V.

5. (currently amended) A method according to ~~claim 3 or~~ claim 4, in which the output voltage is supplied to the injection probe through audio amplifier means.

6. (currently amended) A method according to ~~any one of claims 1 to 5~~ claim 1, in which drive signal voltage and induced current are measured using a multimeter arrangement.

7. (currently amended) A method according to ~~any one of claims 1 to 6~~ claim 1, in which current is measured across a burden resistor.

8. (original) A method according to claim 7, in which the burden resistor has a value of 10Ω.

9. (currently amended) A method according to ~~any one of claims 1 to 8~~ claim 1, in which the injection and test probes have a turns ratio of 1000:1.

10. (currently amended) A method according to ~~any one of claims 1 to 9~~ claim 1, in which measurements are made to a resolution of 5½ digits or 21 bits.

11. (currently amended) A method according to ~~any one of claims 1 to 10~~ claim 1, in which the measured signals are digitally filtered to accept only the given frequency.

12. (original) Apparatus for measuring loop resistance, comprising:

sinusoidal drive signal generating means generating a sinusoidal drive signal at a given frequency;

an inductive injection probe adapted to inject said sinusoidal drive signal into the loop;

an inductive test probe adapted to measure the true RMS drive signal voltage and induced current; and

calculating means for calculating the loop resistance from the measured RMS values.

13. (original) Apparatus according to claim 12, in which the drive signal generating means generates a drive signal above 200 Hz.

14. (currently amended) Apparatus according to 12 ~~or claim 13~~, in which the drive signal generating means generates a drive signal at a frequency of the order of 1 kHz.

15. (currently amended) Apparatus according to ~~any one of claims 12 to 14~~ claim 12, in which the drive signal generating means comprise a microcontroller with a digital to analogue converter.

16. (original) Apparatus according to claim 15, in which the digital to analogue converter is configured to convert a 0 – 10V signal to an output voltage in the range 0 – 200V.

17. (currently amended) Apparatus according to ~~any one of claims 12 to 16~~ claim 12, comprising audio amplifier means connected to supply the injection probe.

18. (currently amended) Apparatus according to ~~any one of claims 12 to 17~~ claim 12, incorporating a multimeter for measuring drive voltage and/or induced current.

19. (currently amended) Apparatus according to ~~any one of claims 12 to 18~~ claim 18, including a burden resistor across which induced current is measured.

20. (original) Apparatus according to claim 19, in which the burden resistor has a value of 10Ω.

21. (currently amended) Apparatus according to ~~any one of claims 12 to 20~~ claim 12, in which the injection and test probes have a turns ratio of between 500:1 and 2000:1.

22. (original) Apparatus according to claim 21, in which the injection and test probes have a turns ratio of 1000:1.

23. (currently amended) Apparatus according to ~~any one of claims 12 to 22~~ claim 12, comprising a digital filter to filter the signals to accept only the given frequency.

24. (original) A method for providing a reference loop of accurately known resistance, comprising the steps of:

making a loop of nominal resistance; and

measuring the loop resistance by:

making electrical contact with said loop at a first contact position;

making electrical contact with said loop at a second position approximately 180° around said loop; and

measuring the resistance of said loop between the contacts;

altering the position of the second contact point until the measured resistance is a maximum, and;

calculating the loop resistance to be four times the maximum measured resistance.

25. (original) A method according to claim 24, in which the resistance is measured in a Wheatstone bridge arrangement.

26. (currently amended) A method according to claim 24 ~~or claim 25~~, in which the loop has sub-loops facilitating fractional loop resistances.

27. (currently amended) A reference loop of accurately known loop resistance made by a method according to ~~any one of claims 25 to 27~~ claim 25.

28. (original) A multi-value reference loop of known loop resistance having at least one sub-loop facilitating measurement of fractional loop resistance by providing more than one current path through an injection probe and/or a test probe.